RUST GEOTECH INC.

Spectral Gamma-Ray Borehole
Log Data Report

Log Event A

Borehole # 41-04-11

Borehole Information

Farm : SX **Tank :** SX-104 **Site Number :** 299-W23-141

N-Coord : 35,483 **W-Coord :** 75,689 **TOC Elevation :** 662.82

Water Level, ft : **Date Drilled :** 3/9/1972

Casing Record

Type : Steel-welded **Thickness :** 0.280 **ID, in. :** 6

Top Depth, ft. : 0 **Bottom Depth, ft. :** 100

Equipment Information

Logging System : 1 **Detector Type :** HPGe **Detector Efficiency:** 35.0 %

Calibration Date : 03/1995 **Calibration Reference :** GJPO-HAN-1

Logging Information

Log Run Number : 1 **Log Run Date :** 5/19/1995 **Logging Engineer:** Bob Spatz

Start Depth, ft.: 0.0 **Counting Time, sec.:** 100 **L/R :** L **Shield :** N

Finish Depth, ft. : 14.5 **MSA Interval, ft. :** 0.5 **Log Speed, ft/min.:** n/a

Log Run Number : 2 **Log Run Date :** 5/22/1995 **Logging Engineer:** Kim Benham

Start Depth, ft.: 13.5 **Counting Time, sec.:** 100 **L/R :** L **Shield :** N

Finish Depth, ft. : 101.0 **MSA Interval, ft. :** 0.5 **Log Speed, ft/min.:** n/a

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Analysis Information

Analyst : S.E. Kos

Data Processing Reference : Data Analysis Manual Ver. 1 Analysis Date : 7/18/1995

Analysis Notes :

Borehole 41-04-11 was completed with a 6-in. diameter, carbon steel casing that was placed to a depth of 100 feet. The wall thickness of the casing is 5/16 in. (.313 in). The casing correction used for data analysis was 0.33 in.; therefore, the reported activities may be slightly higher than actual.

The man-made radionuclides Cs-137 and Eu-154 were detected in the borehole. Cs-137 was identified from the ground surface to about 20 ft, intermittently throughout the borehole, and at the bottom of the borehole. The maximum subsurface activity of 25 pCi/g occurred at a depth of 4 ft. The activity at the bottom of the well is only 0.7pCi/g and may be the result of contamination inside of the borehole. The activities of most of the intermittent occurrences of Cs-137 were at or slightly above the MDA. However, a contamination zone of 1pCi/g was found at 27 feet.

Eu-154 was detected at a maximum activity of 3 pCi/g at a depth of 4 ft. This occurrence coincides with the interval of maximum Cs-137 activity.

In cases where a peak has a very low activity, such as with Th-232, the MDA value shown on the log plot may be 0 pCi/g. This is the result of a calculation mistake in the spectrum analysis program and should be ignored. The mistake was corrected by the software manufacturer, but the log data were not reprocessed, because the error has little significance to the assessment of the tank.

Log Plot Notes:

Three log plots are utilized to present the log data. The Cs-137 and Eu-154 are plotted as separate plots to document the concentration and distribution of these radionuclides. The error of calculated Cs-137 and Eu-154 concentration are shown by error bars at each data point, representing the 95 percent confidence interval. The calculated MDAs are shown on the plots by open circles.

A plot of the naturally occurring radionuclides, potassuim, uranium, and thorium (KUT) is provided to allow correlation of lithologically related features between boreholes. The observed KUT activities are typical for Hanford sediments.

A composite plot incorporates the plots of the Cs-137 and KUT data with the gross gamma data derived from the spectral gamma data and the WHC gross gamma data acquired with the Tank Farm gross gamma logging systems. The composite plot allows correlation of Cs-137 occurrence with lithologic features.